

Materials Laboratory Strategic Directions 05-07

8/14/2006

Construction Materials

Dennis Duffy		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	Phase out the Hveem Mix Design System													90%											
2	Emulsified Asphalt for Tack Coat or Fog Seal													65%											
3	Aggregate Specific Gravity Testing Study													85%											
4	PG Plus Specifications													40%											
5	Nuclear Program Issues													100%											
6	Investigate the use of nPB for solvent in an asphalt extraction													100%											
7	Examination of N-design													25%											
8	DAV Calibration													30%											
9	HMA Contractors Accredited by AASHTO													0%											
Bob Briggs		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
10	Integrated Computer Applications													40%											
11	Replace RegTec with Mats													40%											
12	MTP													40%											

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13	Materials Risk Analysis					75%				
14	RAM's					75%				
15	System Approval of guardrail					50%				

Don Brouillard		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
16	Degradation of Aggregates												100%												
17	Cement Acceptance Program													90%											

Jeanne Andreasson		2005						2006												2007					
		1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
Task	Description	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
18	X-Ray Analysis													25%											
19	Cement Acceptance Program													90%											
20	Paint Specifications													25%											

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Dwight Carlson		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
21	Insulation Failures													80%											
22	Traffic Signal Controller Assemblies													80%											
23	PVC to HDPE													100%											
24	Foam Conduit Sealing Product													100%											

Linda Hughes		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
25	New Courses and Course Development Plan													100%											
26	New Trainers Training Course												100%												
27	Develop Videos													39%											
28	Qualified Inspector Program													0%											

Al Gabo		2005						2006												2007					
Task	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			5th Quarter			6th Quarter			7th Quarter			8th Quarter		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
29	Qualified Products List														95%										
30	Annual Plant Approval Submittal														95%										

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Task	Description
1	<p>Develop a plan to phase out the Hveem mix design system and implement the plan. This should include:</p> <ul style="list-style-type: none"> • Time for completion. • Tasks to be accomplished including how we will do the stripping evaluation without the kneading compactor. We should look at 4% air voids vs 7% air voids during this evaluation. • A space plan for use of the area when equipment is removed. <p>This process started in January 2004 and should be complete in December 2006.</p> <p>Status: As of July 26, 2006 we have only completed 8 Hveem mix designs. By percentage that equals 89.9% Hveem mix design phase out.</p>
2	<p>Emulsified Asphalt for Tack Coat or Fog Seal. Review the specifications with asphalt suppliers and the West Coast Conference on Asphalt Specifications to see if the re-emulsification of can be reduced or eliminated. This review started in November 2005 and will be complete in March 2006</p> <p>Status:</p>
3	<p>Aggregate Specific Gravity Testing Study. This is a two part study aimed at evaluating mechanist methods for the determination of coarse and fine aggregate specific gravity. This evaluation looks at the Corelok devise and the Thermolyne SSDetect testing system.</p> <p>This study started in November 2004 and will be complete in December 2005.</p> <p>Status: Rough draft report completed, final report pending. No change since last report.</p>

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Task	Description
4	<p>PG Plus Specifications. Where is the nation going and where is WSDOT going?</p> <ul style="list-style-type: none"> • What test need to be ran • Wok with Pavement Management to establish work plan and need for plus specifications. <p>Trial projects in Eastern Washington in 2006 construction season.</p> <p>Status: Trial project being constructed this year in the Eastern Region. Results will be evaluated after construction. Specifications drafted PS&E completed but project postponed by Region until next year.</p>
5	<p>Nuclear Program Issues</p> <ul style="list-style-type: none"> • User Audit system • Update nuclear program to USDOT CFR 49 • Training • Employee nuclear gauge testing rel4ease policy <p>This started in November 2005 and should be complete in January 2007.</p> <p>Status: Project complete, changes already printed in Construction Manual.</p>
6	<p>Investigate the use of nPB for solvent in an asphalt extraction and possible abson's.</p> <p>This review will start in January 2006 and should be complete by March 2006.</p> <p>Status: According to the research n-Pb (n-Propyl bromide) can be used as an alternative for the extraction of asphalt. According to AASHTO n-Pb can be used as a substitute for Trichloroethylene for extraction purposes, however, if the asphalt extracted is to be recovered using T170 - Recovery Asphalt from Solution by Abson Method then AASHTO states that reagent grade Trichloroethylene must be used. Since the Bituminous Materials Section performs extractions for the primary purpose of recovering ahpalt for forensic testing use of this alternate solvent and extraction process serves no benefit. Recommend no further action on this task.</p>
7	<p>Examination of N-design : Many states and others are investigating to see if the original compaction levels for Superpave are giving us the best possible pavements.</p> <p>This review started in January 2005 and will be complete in December 2006</p> <p>Status: Continuing to colelct data will review upon completion of construction season for recommendation.</p>

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Task	Description
8	<p>DAV calibration (newest generation using load cells, mixless) There is a new system to calibrate the gyratories without using HMA. We need to get one or several, use them and calibrate our gyratories. We then need to propose that the contractors do the same, especially if going with an unverified mix. This evaluation started in September 2005 and will be complete in March 2006.</p> <p>Status: Received DAV II April 5, 2006. In-house testing being performed now. Field validation planned for May. Study underway.</p>
9	<p>Having HMA Contractors accredited by AASHTO for bulk specific gravity and using their GSB for the mix designs. The contractors would need AASHTO accreditation and follow AASHTO proficiency testing to be able to use their results on GSB.</p> <p>Status: WAPA meeting scheduled for April 28th. Waiting to present to industry.</p>
10	<p>Develop a plan for integrated computer applications for Construction /Materials. Requirements for MATS is currently underway and expect to have an overall plan for future work to be complete by January 2007</p> <p>Status: This was discussed with the Regions Documentation Engineers during the SAM training. We will be meeting this fall to discuss further.</p>
11	<p>Replace RegTec with Mats within 1 year and continue to develop the remainder of Mats. Development is underway and expect to have the first phase of deployment in January 2007 with the complete deployment of MATS by January 2008.</p> <p>Status: Mats development is going slow. Transmittal has been completed. Looking at fasing in testing into Mats that will fase out RegTec.</p>
12	<p>Work on MTP to satisfy people's needs to achieve 100% usage. The plan is to identify the problems in late 2005 and fix the problems in 2006 with 100% usage of the MTP system by January 2007.</p> <p>Status: We had the first deployment of MTP in August 2006. Working on reports. Will have another deployment in fall of 2006.</p>
13	<p>Materials risk Analysis TRB report. A draft report by June 2006 with a final report by January 2007. Construction Manual changes. Changes are ongoing Standard Spec Book changes. Changes are ongoing.</p> <p>Status: The final report was completed in August 2006.</p>

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Task	Description
14	<p>RAM's Work on a partial electronic submittal system and approvals until a full integrated electronic system can be developed. A temporary fix of faxing reports will be done by January 2006. Requirements for a RAM program to allow contractors to electronically submit RAM's will be put together by January 2007. A RAM program should be able to be built by January 2009.</p> <p>Status: Implemented a faxing and a scanning and sending process in December 2005. Currently working on revising the construction manual to allow electronic signature for RAM's.</p>
15	<p>System Approval of guardrail. A committee will be formed to address the DOT requirements by March 2006. Meeting's with industry to develop a guardrail suppliers QC plan will occur to implement a plan by January 2007.</p> <p>Status: Fabrication section drafted a QC plan. Will be meeting with industry in the fall of 2006.</p>
16	<p>Degradation of Aggregates is a critical item of review especially for concrete and base course aggregates. The work and reporting will be done by January 2006.</p> <p>Status: Complete. Final report is in the Materials Lab Library.</p>
17	<p>Implementation of cement acceptance program with Jeanne Andreasson. The process will start in November 2005 and be implemented by December 2006.</p> <p>Status:</p>
18	<p>Consider X-Ray analysis for steel and cement rather than ICP. This information gathering will start in October 2005 and should be completed in December 2005. The implementation could start as early as Jan 2006 and be implemented in June 2007</p> <p>Status:</p>
19	<p>Implementation of the cement acceptance program with Don Brouillard. The process should start in November 2005 and be implemented in December 2006</p> <p>Status:</p>
20	<p>Review and modification of the paint specifications. The reviews and modification of specifications should start in January 2006 and be completed in September 2006.</p> <p>Status:</p>

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Task	Description
21	<p>A review of insulation failures on underground electrical conductors is underway since April 2005 and should be concluded in the next year or so. Some joint effort with Jeanne Andreasson.</p> <p>Status:</p>
22	<p>A review of the region / HQ testing program for traffic signal controller assemblies and qualified tester and verified test equipment will be done in the winter of 05/06. The review should be complete and a report written by the spring of 2006. This will be done in conjunction with Bob Briggs.</p> <p>Status:</p>
23	<p>Investigate tension required to separate a PVC to HDPE connection that employees a PVC threaded mechanical coupler. To be completed by the end of October 2005.</p> <p>Status:</p>

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Task	Description
24	<p>Investigate the application of a foam conduit sealing product for use on DOT construction projects. To be completed by the end of October 2005</p> <p>Status: The purpose of the evaluation of the Polywater Conduit Sealing System was to gather information on the system and to see if there is a possible application for WSDOT. The following are the observations of the installation and the results of the finished product, looking specifically at the effectiveness of the seal and practical issues for removal.</p> <ul style="list-style-type: none"> • The installation and application turned out to be a very messy process. The fear would be that contractor may create a mess in the cabinets or pull/junction boxes at the time of installation that would be difficult to clean up. Perhaps some practice with the installation of the product would reduce the mess some. • Following the safety precautions identified in the Polywater letter addressing Safety with Urethane Foams (attached) were judged to be very important because of the natural messiness of the product. • A special tool is required because the component containers do not fit the standard double barreled squirt gun. • The system was tested on a short piece of PVC and RGS conduit with one cable inserted to simulate a raceway with one cable installed. In both cases the seal obtained at installation failed to hold an air pressure of 5 psi for any length of time. • Removal was possible with simple tools like a screwdriver by chipping the foam into small chunks; however as a practical matter removal in an actual installation may be difficult. <p>It would perhaps be a mistake to generalize from this simple demonstration; the 5psi test was based on it being a part of several Special Provisions in the past, and a user may want to repeat this test or conduct a similar test and judge the results for their specific application. However, based on the experience from this demonstration it appears that foam sealing system would provide some measure of sealing against insect and rodent intrusion but may not be very effective against water intrusion or to keep gases from migrating through the conduit system. In addition, removal the foam seal for the installation of additional circuits or circuit replacement may require an extra effort by the contractor or maintenance personal. The final recommendation would be to continue the search for a conduit sealing system that more closely meets the needs of WSDOT.</p>
25	<p>Identify new courses needed and create a course development plan. December 2005 to February 2006</p> <p>Status: Project completed as of July 11, 2006</p>
26	<p>Develop a plan for training courses required for new trainers. December 2005</p> <p>Status: In the past trainers were trained OJT, this is not an effective way to prepare a trainer for the difficulties of handling distractions and presenting an effective training course. To help our new trainers become better prepared for the classroom and one-on-one mentoring, a list of training classes with descriptions has been created. These classes have been attended by one or more of the current trainers and recommended as good training.</p>

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Task	Description
27	<p>Develop videos for all materials testing procedures. November 2005 to December 2006</p> <p>Status: Overall Project 35% complete; HMA - 75% complete; Aggregate Module; 14% complete; Concrete Module 0% complete; Density Module 0% complete.</p>
28	<p>Develop a plan for implementing Qualified Inspector program. April 2006 to January 2007.</p> <p>Status: 0% complete.</p>
29	<p>Focus on incorporating materials inspected by the Fabrication Inspection office into the Qualified Products List. Will be working with QPL coordinator to get this done. The process should start in October 2005 and end by December 2006. Status: As of April, 2006, percent complete is 88. We have reviewed 95% of the published QPL dated January, 2006 comparing it to the spreadsheet originally submitted to the QPL for entry. The entry to QPL was done manually. The remaining task is to verify address, phone number, products fabricators are approved for, and approval codes.</p> <p>Status: As of April 6, 2006, 88% complete. We have reviewed 95% of the published QPL dated 1/2006 comparing it to the spreadsheet originally submitted to the QPL for entry. The entry to QPL was done manually. The remaining task is to verify addresses, phone No., products fabricators are approved for, and approval codes.</p> <p>As of August 1, 2006, 95% completed. QPL entered manually completed. The remaining task of verification remains.</p>
30	<p>Work to improve efficiency of Annual Plant Approval Submittal process, utilizing e-mail and electronic PDF files. This process involves working with fifteen Precast and Prestress Concrete Faricators, as well as WSDOT Roadway and Bridge Construction offices. The process should start in October 2005 and end by June 2007. Status: As of April, 2006 percent complete is 60. We have met with the Prestressed Fabricator group in January and this group is now utilizing the process for fax resolution. There are smaller plants that are not up on technology and are trying to get there. We will be meeting with the Precast Fabricator in July, 2006 for their annual plant approval and we will present this task for utilization and implementation.</p> <p>Status: As of April 6, 2006, 60% complete. We have met with the Prestressed Fabricator group in January and this group is now utilizing the process for Fax resolution. There are smaller plant that are not up on technology and are trying to get there. We will be meeting with the Precast Fabricator in July 2006 for their annual plant approval and we will present this task for utilization and implementation.</p> <p>As of August 1, 2006, 95% complete. All prestress and precast plants are on board and will be utilizing and implementing system. The next annual prestress/precast plant approval trip will be to followup with plants and then task will be completed.</p>